



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,421	06/24/2003	David S. Miller	020579	4323

23696 7590 08/23/2007
QUALCOMM INCORPORATED
5775 MOREHOUSE DR.
SAN DIEGO, CA 92121

EXAMINER	
SOL, ANTHONY M	

ART UNIT	PAPER NUMBER
2616	

NOTIFICATION DATE	DELIVERY MODE
08/23/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com
kaskanla@qualcomm.com
nanm@qualcomm.com

Office Action Summary

Application No.

10/603,421

Applicant(s)

MILLER ET AL.

Examiner

Anthony Sol

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- Applicant's Amendment filed 6/25/2007 is acknowledged.
- No claims have been amended, canceled, or added.
- Claims 1-35 remain pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 5, 16, 29, 30 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,983,113 ("Asanuma").

Regarding claims 1, 3, 5, 16, 29, and 30,

Asanuma discloses, in an orthogonal CDMA system, receiving a first pilot signal at a plurality of terminals and deriving at least one transmit timing characteristic from the received first pilot signal, wherein deriving is performed within each of the plurality of terminals (col. 6, line 62 to col. 7, line 5, *a **pilot signal** is exchanged between the mobile stations PS1 to PS3 and the base station before the start of communication, which triggers a synchronization establishing operation. At this time, the base station BS1 allocates a channel to each of the mobile stations PS1 to PS3 by the CDMA scheme. Namely, the phase offset of each of **PN codes** and **orthogonal codes** is*

Art Unit: 2616

*specified. As a result, for example, channels ch1, ch2, and ch3 are allocated to the mobile stations PS1, PS2, and PS3, respectively; col. 5, lines 1-7, The base stations BS1, BS2, . . . access the mobile stations existing in their own radio zones E1, E1, . . . by the **CDMA** scheme, using the radio frequency allocated to each of the base stations. In the CDMA communication, long codes and short codes are used as spread codes. For long codes, for example, 153600-chip PN codes are used. For short codes, for example, **64-chip orthogonal gold codes** are used; Abstract, With a CDMA mobile communication system of the present invention, the phase difference sensing circuit of the base station senses the phase **difference with respect to a reference phase** from the cross-correlation value of the up-link channel signals coming from mobile stations and sends timing control information for compensating the phase difference closer to zero to the mobile stations).*

Asanuma further discloses transmitting, at an assigned time, a pilot signal from each of the plurality of terminals in accordance with the derived at least one transmit timing characteristic (col. 7, lines 6-9, *The base station BS1 senses the phase **difference** between the reception phase of the orthogonal code included in the **pilot signal coming from the individual mobile stations PS1 to PS3 and the orthogonal code generated at the base station**.*

Asanuma still further discloses receiving a control signal, the content of the control signal providing instructions to adjust the at least one transmit timing characteristic and adjusting, responsive to the control signal, the at least one transmit timing characteristic (col. 7, lines 10-18, *On the basis of the sense result of the phase*

Art Unit: 2616

*difference, initial timing control information is created. The initial timing control information is transmitted to the corresponding mobile stations PS1 to PS3 via down-link channels. **When receiving the initial timing control information from the base station BS1, each of the mobile stations PS1 to PS3 sets the amount of delay in the delay circuit of the modulation circuit 46 on the basis of the control information to prepare for the start of communication).***

3. Regarding claim 34,

Memory is inherently part of the terminal device/mobile station.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2, 8, 20 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Asanuma in view of Pub. No. US 2004/0147222A1 ("Walsh").

Regarding claims 2, 8, 20 and 31

Asanuma does not explicitly disclose a reverse uplink receiver beam width of approximately 0.5°.

Walsh discloses a beam width of 0.5 degrees (para. 48).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the reverse uplink receiver of Asanuma to use 0.5 degrees beam width as disclosed by Walsh. One skilled in the art would have been motivated to make the combination to use a narrow beam width for higher power and frequency reuse as is well known in the art.

6. Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asanuma in view of U.S. Patent No. 5,838,669 ("Gerakoulis").

Regarding claims 4 and 17,

Asanuma does not disclose transferring signals through a geosynchronous satellite disposed in forward and reverse links.

Gerakoulis discloses a satellite disposed in a CDMA system (see fig. 1 and Abstract).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the orthogonal CDMA system of Asanuma to be used with a satellite as disclosed by Gerakoulis. One skilled in the art would have been motivated to make the combination to synchronize each participating element to a common global reference point (Gerakoulis, col. 1, lines 44-49).

7. Claims 6, 7, 9-14, 18, 19, 21-28, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asanuma in view of U.S. Patent No. 7,151,944 B2 ("Hashem").

Regarding claims 6, 7, 18 and 19,

Asanuma does not disclose a pre-selected fractional part of a chip period such as one-eighth of a chip or less.

Hashem discloses tracking commands which make use of the setting of the eighth bit to choose between $\frac{1}{4}$ and $\frac{1}{8}$ chip (col. 13, lines 4-6; col. 15, lines 26-29).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the orthogonal CDMA system of Asanuma to bring the alignment to within $\frac{1}{8}$ of a chip. One skilled in the art would have been motivated to make the combination to achieve time alignment synchronization (Hashem, col. 13, lines 1-12).

8. Regarding claims 9, 12, 21, 22, 25, 32 and 33,

Asanuma does not disclose explicitly that the control signal directs the terminal to advance or retard its transmit timing.

Hashem discloses that the transmission timing alignment function 40 is coupled to the local clock function 42 and 41 and adds or subtracts timing offsets to the timing reference signal to alter the transmission timing (col. 16, lines 5-8).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the orthogonal CDMA system of Asanuma to include a timing alignment function as taught by Hashem. One skilled in the art would have been motivated to make the combination to achieve time alignment synchronization (Hashem, col. 13, lines 1-12).

9. Regarding claims 10, 11, 13, 14, 23, 24, 26 and 27,

Asanuma does not explicitly disclose advancing, adjusting, or retarding by a predetermined or specified amount.

Hashem discloses a range of changes in timing spanning from $1/8^{\text{th}}$ chip to 16 microseconds (col. 16, lines 15-18).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the orthogonal CDMA system of Asanuma to adjust timing by a specified amount as taught by Hashem. One skilled in the art would have been motivated to make the combination to achieve time alignment synchronization. (Hashem, col. 13, lines 1-12).

10. Regarding claim 28,

Asanuma shows in fig. 3, a clock output 48 connected to a code modulator 46, and a control input 43 connected to a signal receiver 41.

11. Claims 15 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asanuma in view of U.S. Patent No. 6,449,290 B1 ("Willars").

Regarding claims 15 and 35,

Asanuma does not disclose that the control signal directs the terminal to adjust its transmission frequency.

Willars discloses that in the CDMA cellular communications system, each base station normally transmits a pilot carrier signal in each of its sectors. This pilot signal is used by the mobile stations to obtain initial system synchronisation and to provide robust time, **frequency** and phase **tracking** of the base station transmitted signals during a so called air interface chip synchronisation phase (col. 2, lines 36-44).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention was made to modify the orthogonal CDMA system of Asanuma to use control signals to adjust frequency of the terminal as taught by Willars. One skilled in the art would have been motivated to make the combination to achieve tracking of the base station (Willars, col. 2, lines 36-44).

Response to Arguments

12. Applicant's arguments with respect to claims 1-35 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

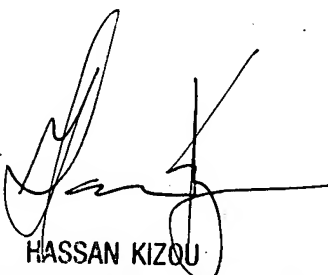
Febvre (US2004/0192201A1) teaches timing correction in communications systems.

Kobayashi (US4694453) teaches adjusting signal transmission timing in TDM signal transmission.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Sol whose telephone number is (571) 272-5949. The examiner can normally be reached on M-F 7:30am - 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

AMS

8/17/2007